

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER- IV (New) EXAMINATION – WINTER 2019

Subject Code: 2142201

Date: 12/12/2019

Subject Name: Mining Machinery-I

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Explain the working principle of gravity haulage.	03
	(b) Write a short note on low profile dumper.	04
	(c) A locomotive weighs 20 tonnef and the co-efficient of adhesion is 0.228. (a) What is the adhesion to the track, and (b) What is the draw-bar pull on (i) a level track, (ii) an adverse gradient of 1 in 100, and (iii) an adverse gradient of 1 in 10. Assume the running resistance of the loco is 69 N per tonnef.	07
Q.2	(a) Write the applications of shuttle car.	03
	(b) Classify the principle types of mechanical brakes used for mining machineries. Explain any one.	04
	(c) Explain the application of over head trolley wire locomotive.	07
	OR	
	(c) Write a note on exhaust conditioner and flame trap used in diesel locomotive.	07
Q.3	(a) Write the uses of wire ropes.	03
	(b) Name the principle types of conveyors and also explain the tensioning arrangement of belt in conveyor.	04
	(c) Describe different safety devices used in haulage system in U/G mines.	07
	OR	
Q.3	(a) Write the functions of the following:- (i) Back catch (ii) Stop – block (iii) Backstay.	03
	(b) Explain the applications of tubs and mine cars in U/G mine.	04
	(c) Write a note on pipe line and distribution of compressed air.	07
Q.4	(a) Name the different types of wire ropes. Explain the construction of any one.	03
	(b) Write a short note on scraper chain type conveyor.	04
	(c) Name different rope capels used in underground mines. Explain any one.	07
	OR	
Q.4	(a) Write a short note on gage selection of haulage track.	03
	(b) Explain the application of rope capels and process of rope capping.	04
	(c) Name different rope haulage systems. Explain the main and tail with neat sketch.	07
Q.5	(a) Describe the functions of tail end of conveyor.	03
	(b) Write the essential conditions of good haulage track.	04
	(c) Explain the rope tensioning arrangement of aerial ropeway.	07
	OR	
Q.5	(a) What do you mean by rope splicing?	03
	(b) Write the advantages and disadvantages of endless haulage.	04
	(c) Write a note on construction and installation operation of aerial ropeways.	07
